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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,936	11/30/2001	Chad A. Mirkin	00-1124-A	5912

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EXAMINER	
ALANKO, ANITA KAREN	
ART UNIT	**PAPER NUMBER**
1765	12

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS12

Office Action Summary	Application N .	Applicant(s)	
	09/998,936	MIRKIN ET AL.	
	Examiner	Art Unit	
	Anita K Alanko	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/15/03 IDS and 6/11/03 amdt "a"* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *9* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 14 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus et al (US 6,347,159) in view of admitted prior art.

Dapkus discloses a method comprising recycling substrate by removing metallic coatings (such as silver, col.3, line 25) comprising:

providing an etching solution 76;

contacting the substrate 22a with the etching solution for a time sufficient to remove the coating (col.7, lines 19-22); and

washing 94 the etching solution away from the substrate (col.8, lines 7-8).

Dapkus does not disclose that the silver to be removed is from a silver stained DNA detection chip having bound gold nanoparticles. However, Dapkus does teach that recycling of chips is useful in order to save money as an alternative to discarding the chips (col.1, lines 45-52). Recycling is useful for a wide variety of substrates (including glass, col.3, line 19) and types of final devices that can be formed (col.3, lines 6-30).

Admitted prior art teaches that silver stained DNA detection chips having bound gold nanoparticles are known (pages 1-2 of specification). Admitted prior art fails to teach that such chips can be recycled. It would have been obvious to one with ordinary skill in the art that it would be useful to remove silver in order to regenerate the surface of the chip in order to save

money by recycling the chips and because Dapkus teaches that it saves money to recycle substrates rather than to discard them.

It would have also been obvious to use the method of Dapkus to regenerate such silver stained DNA detection chip having bound gold nanoparticles because such chips are useful as taught in the admitted prior art.

The modified method of Dapkus thus teaches a method that produces a recycled chip for subsequent reuse in a nucleic acid hybridization assay.

As to claims 27-28, Dapkus discloses to apply ultrasound 100. Apparatus limitations are given little weight in process claims.

Claims 14-20, 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus et al (US 6,347,159) in view of admitted prior art and Xia et al (1995).

The discussion of modified Dapkus from above is repeated here.

As to claim 15, Dapkus does not disclose an etchant useful for silver. Xia teaches a useful etchant for silver comprising cyanide (p.2332, "Experimental Section"). It would have been obvious to one with ordinary skill in the art to use a cyanide etching solution in the modified method of Dapkus because Xia teaches that it is useful for etching silver.

As to claims 16-19, Xia teaches that the cyanide etching solution contains KOH, $K_3Fe(CN)_6$ and $K_4Fe(CN)_6$. Xia also teaches that $K_2S_2O_3$ is useful in the etchant. It would have been obvious to one with ordinary skill in the art to use $Na_2S_2O_3$ in the method of Xia because Na and K are both alkali metals and conventional alternatives for each other in etchants. The concentration of the etchant determines how effective the etching is because it determines the

amount of etching species available for etching. It would have been still further obvious to use the etchants in the concentrations cited because the concentrations appear to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

As to claim 20, Dapkus discloses to dip the substrate into the etching solution.

As to claim 22, Dapkus discloses to wash with water (col.8, lines 7-8). It would have been obvious to one with ordinary skill in the art to wash with water in the modified method of Dapkus because water washing is conventional for removing etchant as taught by Dapkus.

As to claim 23, the time for applying an etchant also determines how efficient the etching is because it determines the amount of time that the active etching species is available for etching. It would have been still further obvious to use the etchants for the time cited because the time appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

As to claims 24-26, admitted prior art teaches that silver stained chips with bound gold nanoparticles are known (page 1, lines 27-31), which are capable of catalyzing silver reduction.

As to claim 29, the time for applying the ultrasound also determines how efficient the etching is because it determines the amount of active etching species that is available for etching. It would have been still further obvious to use the ultrasound for the time cited because the time appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

Claims 14-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus et al (US 6,347,159) in view of admitted prior art, Xia et al (1995) and Akahoshi et al (US 5,294,291).

The discussions of modified Dapkus from above are repeated here.

As to claim 21, Dapkus does not disclose to spray the etching solution. Akahoshi teaches that it is useful to spray an etchant as a means for applying etchant to a substrate (col.3, lines 8-10). Therefore, it would have been obvious to one with ordinary skill in the art to spray the etching solution in the modified method of Dapkus because Akahoshi teaches that this is a useful technique for applying an etching solution.

Response to Amendment

The objection to the specification is withdrawn. The claims are rejected over Dapkus et al (US 6,347,159) in view of admitted prior art, Xia et al (1995) and Akahoshi et al (US 5,294,291).

Applicant's arguments filed June 11, 2003 have been considered, but are not persuasive. It is conventional in the art to recycle substrates. Dapkus teaches that recycling is preferable to discarding chips in order to save money. Examiner acknowledges that Dapkus is not directed to silver stained detection chips. However, one with ordinary skill in the art of etching substrates is well aware of the parallel art of semiconductor manufacturing and the recycling of substrates to save money. It is also obvious to recycle to save money for other substrates, for example glass, as disclosed by Dapkus.

Applicant argues that Dapkus is directed to a completely different problem and provides a solution specifically to that problem. Examiner disagrees in that Dapkus is related to recycling glass substrates, which is similar to the instant invention, and recycling to save money in general is related to the instant invention.

Applicant argues that the pitting in Xia teaches away from the use of Xia's etchant for recycling. This is not persuasive since Xia is merely cited to teach a useful etchant for silver. Since the material to be etched in Xia is the same composition as in the instant invention, the etchant taught by Xia is also expected to be useful in the instant invention. It is obvious to optimize the etchant for the best percentage composition for best results since the concentration of the etchant is a result-effective variable that can be optimized.

Xia is not relied upon to teach ultrasound. Dapkus teaches the usefulness of ultrasound.

Applicant's arguments about Akahoshi are not persuasive. Akahoshi is not relied upon to teach ultrasound. Akahoshi is relied upon to teach that spraying is a conventional and useful technique for applying an etchant.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 703-305-7708. The examiner can normally be reached on Monday-Wednesday and Friday, 8:00 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 703-305-2667. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Anita K. Alanko
Anita K Alanko
Primary Examiner
Art Unit 1765

AKA
August 11, 2003